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HEADS OF A COMMUNICATION ON THE PATHOLOGY AND TREATMENT OF INFLAMMATION.

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I. Importance of the subject as a foundation for a true pathology, and for sound practical knowledge in medicine.

II. Inflammation defined—*an exudation of the normal liquor sanguinis*—other definitions referred to, and their correctness called in question—the view that inflammation may exist in non-vascular tissue opposed by an examination of what occurs in so called ulcerations of cartilage, cornea, and epithelium—the distinction being that in inflamed parts we have exudation of liquor sanguinis, in which *new* cells form, whereas in non-vascular tissues we have simply increased growth by endogenous multiplication of *pre-existing* cells.

III. Description of the phenomena of Inflammation—divided into, 1st, preliminary; 2d, essential; and 3d, resulting phenomena.

1. The preliminary phenomena, are contraction, and enlargement of the smaller vessels—increased and diminished flow of blood—oscillation and stoppage, or so called congestion.
2. The essential phenomenon is exudation of the liquor sanguinis, without which no inflammation can exist—the distinction between it and effusion of serum, and extravasation of blood pointed out.
3. The resulting phenomena are two—(a), Increased growth by new cell formation; (b), absence or diminution of cell growth.

- IV. 1. The theory of the preliminary phenomena consists in that of, (*a*), spasm and paralysis of the extreme vessels, sometimes operating through the nervous system directly or by reflex action—at others the result of injury, chemical or mechanical, applied to the part; (*b*), in that of increased quantitative and diminished qualitative attraction, exerted by the tissues on the blood; (*c*), the increased spissitude of that fluid.
2. The theory of the essential phenomenon consists in the attraction of the liquor sanguinis through the vascular walls into the surrounding parenchyma, or neighbouring cavities, where it coagulates to form a foreign body.
3. The theory of the resulting phenomena consists in attributing to the exuded matter, in one case, (*a*), the properties of a living blastema when it follows the vital laws of cell growth; in the other case, (*b*), the properties of dying or dead matter, when it is rendered obedient to chemico-physical laws.

V. The exuded matter, if it live, is transformed in various ways.

1. Into pus cells, as observed in the formation of an abscess, or in pneumonia, constituting suppuration.
2. Into molecular fibres and cells—the serum being set free—then into vascular villi, whereby the serum is absorbed, and lastly into dense fibrous tissue, forming adhesions.
3. Into granular masses and cells, whereby the whole is transformed into a fatty molecular substance, constituting the inflammatory form of softening.
4. Partly into fibre cells and partly into pus cells, whereby injury to or loss of tissue is repaired by the first or second intention, and by the modelling process. In the first case there are few pus cells, in the last none.
- 5.¹ Into cartilage and then into bone, whereby fractures of the skeleton are united.

VI. The disappearance of the exudation is brought about, 1st, By the breaking down and disintegration of the exudation, which is rapid in proportion to the amount of cell formation in it; 2d, The passage of the disintegrated exudation in a fluid state into the blood; 3d, Its elimination from the economy by the excretory integumentary, intestinal, and renal glands.

VII. The exuded matter, if it dies, may do so slowly or suddenly. If slowly, it gradually disintegrates, involving the surrounding tissue, producing ulceration; if rapidly, its elements combine chemically with those of the atmosphere, causing inflammatory gangrene.

VIII. Symptoms of inflammation—their fallacious character—pain, heat, redness, and swelling may be all absent in undoubted cases of inflammation—facts pointing out the errors into which a study of mere symptoms is con-

¹ In the history of exudation, though not in the limited one of inflammation as defined, we might continue,—6. Into various tissues producing certain forms of tumor. 7. When impoverished into tubercle. 8. When endowed with inherent power of new cell multiplication, into cancer.

tinually leading practitioners. The importance in medical practice of conjoining an observation of symptoms, with a knowledge of physical signs.

IX. The preceding facts lead to the conclusion, that all the healing phenomena of inflammation are reparative, and depend on cell growth. From them is formed the *INDUCTION*—*that the treatment of inflammation to be successful must be in harmony with those laws which govern the formation, development, and disintegration of cells.*

X. The treatment of inflammation bears reference to the three orders of phenomena. The preliminary phenomena are seldom seen in medical practice, and when they are, the symptoms cannot be separated from those of fever. In surgical practice they may be predicted to follow injuries and operations, but there are no means of arresting them, and the treatment is expectant.

XI. The essential phenomenon, also, is seldom recognised at the moment of its occurrence in medical—but frequently observed taking place in surgical practice. In the former case, it is often most important to arrest exudation—but no remedies can ever be proved to have done so. This shown by the effects of general and local bleeding—which are the remedies that have been supposed to be now indicated. In surgical practice the exudation is often necessary to produce curative results, as adhesion, granulation, cicatrization, and callus. To check it in such cases would be injurious. But when it is thought advisable to do so, the direct application of cold is indicated. Hence, *we cannot cut short an inflammation once produced*, although, hitherto, this has been a chief object with medical practitioners. All that we can accomplish in this, as in other structural lesions, is to conduct it to a favourable termination.

XII. The resulting phenomena are those with which medical art has most to do, and the effects of our remedies may be considered *seriatim*.

1. *Bleeding*.—The notion that we can empty the vessels of internal inflamed parts, by general bleeding, is erroneous; whereas, by diminishing the strength of the economy, we interfere with the most important condition necessary for cell growth, and, thereby, the necessary changes of the coagulated exudation. Local bleeding is also useless in internal inflammations, and the relief it sometimes occasions ascribed to effects on the nervous system.
2. *Mercury*, supposed to favour absorption of the exudation, yet, as this is best accomplished by encouraging cell growth, its employment maintained to be useless.
3. *Antimony and Neutral Salts*, operate on the blood, by rendering its fibrin more soluble, and so favouring excretion.
4. *Diuretics, Diaphoretics, and Purgatives*, favour the last stage of the process, by assisting elimination from the blood through the various glands. Of these, diuretics are the most universally applicable.
5. *Sedatives* act on the nervous system, diminish pain and excitability, but their influence on the exudation is undetermined. Cold, however, is opposed to cell growth.
6. *Increased warmth* is one of the most powerful stimulants to cell growth; hence it favours suppuration.

7. *Moisture* also favours the formation of independent cells, as those of pus, whilst *dryness* favours the formation of fibre cells and of more permanent tissues.
8. *Pressure* is opposed to the expansion and growth of cells; but when these are formed, it favours their disintegration and absorption, as it does the disappearance of more permanent formations.
9. *Counter irritants*—their action not understood—probably excito-motory.
10. *Nourishment* and *wine* are all-important, as soon as the febrile excitement accompanying the early phenomena has subsided, in order to favour the transformation and disappearance of the exudation. For the same reason they are indicated in ulcers arising from weakness, or to counteract the effects of gangrene, and excessive discharge.

XIII. Description of the mode of treating inflammation on the principles brought forward, and the great success which has attended it, demonstrated.

XIV. From the facts brought forward, we are led to the DEDUCTION, *that the most successful treatment of inflammation, is that which is in harmony with those laws which govern the formation, development, and disintegration of cells.* This is the same proposition as we were led to induce from pathology, and which it is submitted is now established.

XV. The contradictory results of experience alluded to, and the explanation of the fact now generally admitted, that blood-letting is of no benefit in inflammation, because the disease has changed its type; opposed, 1st, Because symptoms without physical signs are most fallacious in a diagnostic point of view; and, 2d, Because there is no more ground for supposing that the exudation from blood is different now to what it was in the days of Cullen and Gregory, than there is for supposing that tubercles, cancers, or fibrous tumors are different.

XVI. *Conclusion*—Summary—a vindication of medicine against the attacks of the ignorant and superficial. In the present state of the art, the only mode of improving it, is by advancing the sciences on which it is based.